CLAIMS

1. Process for desulfurization of a hydrocarbon-containing fraction that comprises at least one treatment stage of said fraction with an oxidizing agent in the presence of a catalyst of said oxidation, in which said catalyst comprises at least one metallic oxide of chemical formula M_xO_y, whereby M is an element that is selected from the group that consists of the elements of groups IV-B, V-B or VI-B of the periodic table, and said catalyst is in bulk form and essentially consists of the active phase.

2. Process for desulfurization according to claim 1, in which said hydrocarbon-containing fraction is a petroleum fraction whose boiling points are between 150 and 500°C.

3. Process for desulfurization according to any of the preceding claims, in which said hydrocarbon-containing fraction comprises a fraction by weight of sulfur-containing compounds of between 5 ppm and 5%.

4. Process for desulfurization according to any of the preceding claims, in which the temperature of said oxidation reaction is between 40°C and 300°C.

5. Process for desulfurization according to any of the preceding claims, in which the temperature of said oxidation reaction is greater than or equal to 100°C.

6. Process for desulfurization according to any of the preceding claims, in which the pressure of said oxidation reaction is between 0.1 and 5 MPa.

7. Process for desulfurization according to any of the preceding claims, in which element M is selected from the group that consists of vanadium, chromium, zirconium, molybdenum, tungsten, and titanium, by themselves or in a combination.

8. Process for desulfurization according to any of the preceding claims, in which said catalyst comprises a molybdenum oxide.

9. Process for desulfurization according to any of the preceding claims, in which said catalyst is used in the form of powder, balls or extrudates.

10. Process for desulfurization according to any of the preceding claims, in which said oxidizing agent is selected from the group that consists of peroxides, hydroperoxides, organic peracids, ozone, oxygen, nitrogen oxides and metallic oxidizing agents, by themselves or in a combination.

11. Process for desulfurization of a hydrocarbon-containing fraction that comprises at least the following stages:

a) an oxidation of at least a portion of the sulfur-containing compounds that are contained in said hydrocarbon-containing fraction in the presence of at least one oxidizing agent and a catalyst according to one of claims 1 to 10,

b) a separation of the oxidized sulfur-containing compounds of the products obtained from stage a) by extraction, distillation or adsorption.

12. Process for desulfurization according to claim 11, in which stage b) is an adsorption that is carried out in at least one adsorbent column, whereby said adsorbent is selected from among the amorphous oxides, such as the amorphous aluminas, amorphous silicas or amorphous silica-aluminas, or from among the crystallized oxides, such as the zeolites, clays or a mixture of at least two of the elements of said group.

13. Process for desulfurization according to any of claims 11 or 12 also comprising a separation stage of said catalyst between oxidation stage a) and separation stage b).